

EXHIBIT B – SCOPE OF WORK AND BUDGET

NATIONAL ACADEMY OF SCIENCES/NATIONAL RESEARCH COUNCIL DIVISION ON EARTH AND LIFE STUDIES

WATER SCIENCE AND TECHNOLOGY BOARD BOARD ON ENVIRONMENTAL STUDIES AND TOXICOLOGY

Water Resources Management, Instream Flows, and Salmon Survival in the Columbia River Basin, Washington

SUMMARY

The National Research Council proposes to undertake a study that will **assess** the impacts of water management on salmon survival in the Columbia River basin, Washington. The study will be carried out by an expert committee of approximately 13 members. The committee will hold approximately five meetings over the study period to gather information, deliberate critical issues, and write its report. The committee will sponsor an information-gathering workshop in the early stages of its work, likely in connection with its first meeting. The study will result in a comprehensive, written report. It will be used as a basis to help reform water law and update water management approaches in the State of Washington. The total estimated cost for this study is \$488,000 for the period September 1, 2002 to March 15, 2004.

BACKGROUND

Washington Governor Locke is promoting the development of a new state water resources strategy, which represents an attempt to update water resources management approaches and reform of water law. The governor has stated that Washington needs a new water management program for the Columbia River that meets the needs of a growing population, a healthy economy, and the needs of fish and healthy watersheds. Without a new set of management principles, conflict is likely to continue to hinder efforts to develop water policies that meet contemporary economic and environmental needs and that can be adjusted in the face of new scientific evidence and other relevant changes.

As water has been allocated to meet the needs of people, agriculture, endangered fish, and ongoing hydropower system operations, competition for water from the Columbia River is escalating. There are hundreds of pending applications for new water rights from the Columbia; and there is disagreement between agencies and others on the streamflows that are needed to support salmon and their habitat. The lack of a common understanding of instream flow requirements for salmon and how these affect out-of-stream uses is at the heart of the debate.

As a result, stakeholders are broadly divided into two camps: those interested in preserving and enhancing the quantity of water available to increase streamflows to support salmon recovery, and those who share an interest in accessing water for out-of-stream uses. Scientific work in the region has often been tainted by charges of value-laden and biased conclusions. Middle ground in the Columbia basin water debate is submerged by strongly held viewpoints on either side of the issue.

In this context, litigation is increasingly used as an option to effect changes to water management practices. Irrigators, municipalities, tribes, and other applicants for Columbia River water frequently seek legal recourse to address their needs. Environmental interests threaten legal and other actions that would block the implementation of any new water allocations by the state. Failure to act on these issues may leave the Columbia River system in long-term legal gridlock, as well as causing possible additional declines in the numbers and well-being of salmon. The state of Washington, the other basin states, and the nation clearly share an interest in moving beyond these approaches to river management and problem solving.

In the view of the Washington Department of Ecology, an independent review of the existing scientific data related to instream flows and salmon survival is necessary to help form the basis for some common scientific understanding among the core interests. At present, the state has not directed a comprehensive scientific review of its own for the Columbia River. Lacking a better understanding of management options that are framed by scientific knowledge, and the level of confidence that policymakers can place in the underlying science that justifies and outlines these options, discussions of a revised management framework are likely to slide back into existing acrimonious debates. Thus, a review of the issues by an independent organization becomes a necessary first step in developing a stronger understanding and a vehicle for constructive negotiations between affected interests.

The Columbia River is a highly managed system; there are large-scale systemic differences in the river today as compared to the river in which native salmon evolved. Average flows on the Columbia River today are never as high nor as low as they were historically, and flows may vary sharply from hour to hour because of peaking hydropower operations. The river's velocity has been slowed as water is collected into large pools behind dams and released in a controlled manner. Disease, predation, and other secondary threats to salmon survival have increased with these conditions.

There is well over 20 years of scientific research that has explored river management options for improving rates of salmon survival. Early studies of Columbia River salmon survival concluded that increased instream flows would result in improved salmon survival. Early findings that correlated increased river flows with increased salmon survival established the scientific basis for modifying operations of the Columbia River hydropower system to enhance salmon survival. The survival-flow linkage has been a cornerstone of management actions to increase and protect increased instream flows on the Columbia. This premise, however, has become increasingly controversial over time.

Since the mid-1970s, additional research examining the nature and extent of the relationship between survival and flow and other important factors relevant to salmon survival has been completed. Large scale data gathering efforts have been put into place. The most recent reviews of scientific data regarding flow and survival are contained in the 2000 Biological Opinion issued by the National Marine Fisheries Service and in the report of the Bonneville Power Administration's Independent Science Advisory Board. The body of work that now exists, having failed to resolve the flow-survival debate, is nonetheless impressive in its scope and depth.

The scientific knowledge of the Columbia River system may have the capacity to inform decision-makers of the range of state management options that exist in the context of the managed river, the level of scientific confidence in the data justifying these options, and the range of benefits that will occur at different levels of implementation. However, a comprehensive review of the existing data and research has not yet been conducted.

PROPOSED PLAN OF ACTION

The National Research Council will appoint a committee of experts to review scientific data on the Columbia River system in respect to water management and salmon survival. The committee will assess the risks to salmonids at critical stages in their life cycles under a range of different Columbia River system

water management scenarios—including diversions for hydropower and other purposes—under both historical and present hydrologic conditions.

The study will:

- 1) Work with a regional science advisory panel (to be appointed by the Washington Department of Ecology) to gather information necessary to accomplish tasks 3 and 4, from the scientific community with direct experience in the Columbia River Basin, to include holding a workshop in Eastern Washington State.
- 2) Review and evaluate existing scientific data and analyses related to fish species listed under the Endangered Species Act in the Columbia River basin, as necessary to accomplish tasks 3 and 4.
- 3) Review and evaluate environmental parameters critical to the survival and recovery of listed fish species as they relate to the hydrology of the Columbia River in the context of the continued operation of the Federal Columbia River Power System and other mainstream power generation facilities. This will include instream flows sufficient for fish and wildlife as well as the potential effects of decreased natural storage capacity on river hydrology.
- 4) In light of existing withdrawals, describe the risks to salmonid survival of a range of water withdrawals, and the cumulative effects of other factors, during critical times of the salmon life cycle (Note: the State of Washington Department of Ecology suggests an appropriate range of water withdrawals to consider is 250,000 acre-feet to 1.3 million acre-feet).
- 5) Evaluate the effects of proposed management criteria, diversion quantities, and features of potential water management alternatives (such management information will be provided by the State of Washington).
- 6) Identify gaps in the knowledge and scientific information that are needed to develop comprehensive strategies for recovering and sustaining listed species and managing water resources to meet human needs.

The committee of approximately 13 members will require expertise from a range of biological sciences, hydrologic, engineering, and social sciences backgrounds. Given this committee's charge to assess riverine sciences, hydrologic, aquatic ecology, and fisheries sciences experts will form the core of this committee. A hydrologic/civil engineer(s) should be included to explain Columbia River dam and reservoir operations and to help explain the engineered system's possibilities and limitations for changes in reservoir release patterns. An economist(s) should be included to explain economic implications of various management options the committee may consider. An expert in public policy should be included to help understand the current and historical policy context, which will help the committee understand past management policies, and their outcomes, as well as the prospects for effecting policy change. A water lawyer will help the committee understand the array of laws surrounding Columbia River dam and reservoir management and the legal constraints facing water managers and that may enable or constrain the committee's recommendations. The NRC will seek to achieve the normal balances in respect to gender and ethnic diversity, age, Academy membership, geographic perspective, sectoral background, and other factors. The committee's work will be overseen by the NRC's Water Science and Technology Board and Board on Environmental Studies and Toxicology. It will be supported by the NRC staff who will provide research and logistical support, liaison with the sponsor(s), and compliance with all policies of the National Academies.

The committee will sponsor an information-gathering workshop in Eastern Washington in the early stages of its work. It will hold approximately five meetings over the course of its study to gather information, deliberate issues, and work on its report. During the course of its study, the committee will provide a report(s) of study progress to the sponsor(s). The committee is likely to call upon local experts to help inform it on key science issues; this might be done in the form of a local resource panel to be organized by the State of Washington.

ANTICIPATED RESULTS

The committee will convey the results of its work in a comprehensive, written report building on previous, related work by the NRC and other organizations. It will be used as a basis to help reform water law and update water management approaches in the State of Washington. It will be peer reviewed in accordance with the procedures established by the NRC's Report Review Committee. At project completion, representatives of the committee and staff will perform appropriate dissemination activities, including conducting briefings for sponsors, giving presentations at relevant technical and policy conferences, and writing articles for relevant publications.

Reports resulting from this effort shall be prepared in sufficient quantity to ensure their distribution to the sponsor and to other relevant parties, in accordance with Academy policy. Reports may be made available to the public without restrictions.

PUBLIC INFORMATION ABOUT THE PROJECT

In order to afford the public greater knowledge of Academy activities and an opportunity to provide comments on these activities, the Academy may post on its website (www.national-academies.org) the following information as appropriate under its procedures: (1) notices of meetings open to the public; (2) brief descriptions of projects; (3) committee appointments, if any (including biographies of committee members); (4) report information; and (5) any other pertinent information.

FEDERAL ADVISORY COMMITTEE ACT

The Academy has developed interim policies and procedures to implement the Federal Advisory Committee Act, 5 U.S.C. § 1 et seq. (FACA), as amended by the Federal Advisory Committee Act Amendments of 1997, H.R. 2977, signed into law on December 17, 1997 (FACA Amendments). The FACA Amendments exempted the Academy from most of the requirements of FACA, but added a new Section 15 that includes certain requirements regarding public access and conflicts of interest that are applicable to agreements under which the Academy, using a committee, provides advice or recommendations to a Federal agency. In accordance with Section 15 of FACA, the Academy shall deliver along with its final report to the sponsor a certification by the Responsible Staff Officer that the policies and procedures of the National Academy of Sciences that implement Section 15 of FACA have been complied with in connection with the performance of the contract/grant/cooperative agreement.

BUDGET

State Fiscal Year 2003 (through June 30, 2003)

Salaries	95,087
Program Direction, Management and Space Costs	59,905
Travel	70,445
Technology/Communication	7,176
Meeting Expense	4,694
Other Costs	<u>3,075</u>
Subtotal SFY 2003	240,382
G&A	44,618
TOTAL SFY 2003	285,000

State Fiscal Year 2004 (July 1, 2003 – March 15, 2004)

Salaries	83,866
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Program Direction, Management and Space Costs	49,812
Travel	18,335
Technology/Communication	5,740
Reports	9,824
Meeting Expense	700
Other Costs	<u>2,942</u>
Subtotal SFY 2004	171,219
G&A	31,781
TOTAL SFY 2004	203,000
TOTAL MAXIMUM COMPENSATION	488,000